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"Pick-up" Applicants Offer To Serve Small Towns

Waiting action by the Civil Aeronautics Board and the time when air service can return to civilian life, are 23 air mail pick-up applications that point the current post-war trend of thought to the day when almost any paved-street city in the United States might have air mail service.

While still in the experimental stage, pick-up service between smaller cities, not regularly served by air transport lines, has gradually become an accepted form of transportation, with potential development of the use of gliders for passengers and light cargo.

Board To Investigate

In tune with the times, the Civil Aeronautics Board at the close of last month issued an order instituting an investigation of "local feeder pick-up" air service to determine the extent to which air transportation can be extended to smaller communities. "Local feeder pick-up" implies passenger as well as express and mail service.

The entire aviation industry, federal and state aeronautics bodies, trade associations, and airport managers have been notified of the Board's investigation and will have the opportunity to attend a public hearing to be held at a future date before an examiner of the Board.

"Pick-up" Inexpensive

The only equipment a town needs for pick-up service is two ground station poles to support a line with the package attached. The plane picks up the package in flight. Thus, costly airport facilities don't stand in the way of air mail service. A glider can be picked up from the ground in about the same way by a flying plane.

Pick-up service for 115 cities and towns in six states has been in operation for almost four years under the Experimental Air Mail Service Act of 1938. The communities on the pick-up routes outside of terminal cities range from 500 to 120,000 in population. They are on an average of 17 miles apart, with some only five miles from each other. Very few of these have airports that could accommodate a modern airliner. Since the service has been in operation, 90 to 95 percent of the schedules have been completed. All American Aviation, Inc., the company which has been operating these pick-up routes, has also been experimenting with the use of gliders for passengers and light cargo for the past year and a half.

(See "Pick-up" Service, page 55)

Aircraft Testing Explained

Whether you are just starting to study aviation or are an aircraft manufacturer you will be interested in the article on structural testing of aircraft by B. L. Springer, which appears on page 45 of this issue. It was presented as a paper at a recent meeting of the Society of Automotive Engineers in Detroit, and both SAE and military clearances have been obtained for its publication in the Journal.

Any comments or questions regarding the article should be addressed to Mr. Springer in care of the Aircraft Engineering Division, CAA, Washington.

Good Job Done By Airlines During 1942

That United States domestic air carriers held their own in the face of Government requisitioning of nearly half their planes in 1942 is revealed by an eight-year graphic comparison of domestic operations which appears on pages 48 and 49 of this issue of the Journal.

The graphs show at a glance that our domestic airlines in 1942 carried over five times the number of passengers that they did in 1935. The study also shows that in the face of enforced operation on a reduced service pattern the airlines last year carried more than twice the amount of express they did in 1941. Last year was also the first year that any lines reported 100 percent utilization of seat space for any routes. In this regard it will be noted that the 1942 passenger load factor is up 13 percent.

Safe Flights

During 1942 the safety record of the airlines was consistently good, the graphs point out. Although passenger fatalities increased 21, the safety record is noteworthy when it is remembered that seat-space utilization during the year was near the saturation point. With all seats occupied, any serious accident could cause a plane load of fatalities. But one sees from the record that in 1942 the number of fatalities for which civil operations could be assigned responsibility increased only 11 over 1941. A reckless Army pilot caused nine of the 1942 passenger fatalities in one collision accident.

Airline efficiency is emphasized by the fact that the three fatal accidents for which the airlines are accountable are outweighed by some 6,000,000 completed takeoffs and landings.



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CIVIL AERONAUTICS ADMINISTRATION

U. S. DEPARTMENT OF COMMERCE



Synthetic Rubber Tires Approved for Plane Use

Synthetic rubber tires for commercial airline use were approved for the first time in March by the Civil Aeronautics Administration. The tires approved by CAA were made by the Goodrich company, but it is expected that many other companies will soon be making similar tires for aircraft use.

Approval was based on the performance over several years time of the same synthetic materials in use for automobile tires and in Army Ordnance use, and also on the results of the "burst" tests which indicated that the tires had a high element of safety.

Judging by the use records, the synthetic tires apparently equal rubber in lasting qualities. Time may even prove them superior. Many car drivers have reported a mileage of 30,000 or over on synthetic rubber. One driver has actually obtained a mileage of over 45,000.

In the "burst" tests the synthetic rubber airplane tires showed equal, if not greater, strength than natural rubber.

The plane tires approved by the CAA are 100 percent synthetic. Both cords and treads are made from composition materials.

Indirect Violators To Share Blame

CAA Safety Regulation field men have been instructed to report not only those charged with direct violations of the Civil Air Regulations but those who, through active participation, carelessness, or neglect of duty or safety responsibilities are indirectly responsible for violations or resulting accidents.

Emphasis has always been placed upon fully reporting the violation committed and upon exact definition of the responsibility of the violator. Instruction No. 137, sent out last month over the signature of Fred M. Lanter, Director of Safety Regulation, expresses the conviction that many violations and accidents can be prevented through the proper cooperation of aircraft owners, operators, instructors, airport managers and other aviation personnel.

The official instruction stated "The relation of every person involved in a violation should be clearly set forth in the violation report and a recommendation submitted for action against them for their part even though there is no section of the regulations covering the particular phase of their involvement."

Ground Loads Handbook

Copies of the illustrated Ground Loads handbook ANC-2 are available at 10 cents a copy at the Superintendent of Documents, Government Printing Office.

The handbook covers the requirements for the tail-wheel and tricycle types of landing gear, and emergency landing and handling structures.

New Office Issues Inter-American Air Schedules

A recently completed schedule of all airlines in South and Central America and Mexico will be made available to the domestic aviation industry by the new Office of Air Transport Information in the Department of Commerce.

The collection has the latest information on the operating schedules, passenger fares and express rates on 40 airline companies in the other Americas. It also contains maps showing the frequency of service for each country and has in addition two regional airline route maps in color.

Similar airline schedules and frequency maps have been completed by the Office for the countries in the Eastern Hemisphere, and work is in progress on Canada and Alaska. The schedules and maps for these countries are on the restricted list, however, and will not be issued outside the government until after the war. Changes will be made in the schedules from time to time to keep them up-to-date.

World-wide Manual

Another comprehensive project of the Office of Air Transport Information is the compiling of a manual that will give a brief summary of pertinent data about every airline in the world. The first airline handbook of its kind to be compiled in this country on a world-wide scale, this manual is designed to be a ready source of information on any company in the air. It will include the name of the airline company, home office, officials, a brief history, the financial standing, number of personnel, route mileage, territory served, type of aircraft used, revenues, expenses and extent of subsidies, safety record, growth, competing and connecting airlines and so forth. The airline summary will be accompanied by maps showing the routes of the company.

The Office of Air Transport Information, headed by Darwin Charles Brown and staffed by 20 experts, was organized last fall to avoid duplication and overlapping by various government agencies in their studies of domestic and international air problems.

The gathering of basic historical, operational, commercial, financial and legal material concerning air transports, particularly in the foreign field, is centralized in this office and the material is issued to the other government agencies dealing with aviation.

While the material other than that concerning the airline schedules in Latin America cannot be given to non-government individuals during wartime, the data that is being collected by the Office of Air Transport Information will probably serve as one of the most valuable information sources in planning international operations after the war.



Collision Toll High During February

During the month of February 1943, nine fatal accidents in non-air carrier flying, and two fatal accidents in air carrier operations were received by the Safety Bureau. Investigation was completed on six non-air carrier accidents and both air carrier accidents. They occurred as follows:

Forced Landings

1. While flying at an altitude of 1,000 feet, engine failure was experienced, and pilot was forced to land on very rough open water. The aircraft sank in a few minutes and occupants perished before rescue was possible.

2. At an altitude of 1,000 feet, power plant malfunction was experienced and a forced landing in water resulted. Pilot and passenger died of exposure.

Simulated Forced Landing

1. In simulated forced landing over row of trees, pilot failed to see tree in line of flight that was about 20 feet taller than others until too late to avoid a collision which caused the plane to nose over and fall to ground in an inverted position.

Collision (Other Objects)

1. During a routine check flight, aircraft evidently flew or stalled into ground. There were no actual eyewitnesses as far as is known, and definite information as to how the accident occurred is unavailable to date.

2. During an instrument check flight, the aircraft crashed into the surface of sea, apparently out of control and the crew was lost. Weather or structural failure are possible factors but definite evidence is unavailable to date.

3. Pilot, flying contact, elected to maintain course in vicinity of high, mountainous terrain during conditions of low ceiling. Airplane struck mountain side at an altitude of about 12,500 feet, was demolished by impact, and burned.

Collision (Other Aircraft)

1. Two students who were practicing in the same area were apparently concentrating on maneuvers when the two planes collided almost head-on. One ship spiraled down and landed with little further damage while the other entered a spin from which recovery was not made before striking the ground.

Spin—Stall

1. While flying at about 500 feet over his parents' home, the pilot entered a steep bank during which the plane stalled and fell to the ground out of control.

Inept Pilots Main Cause Of Accidents, Study Shows

The accident trend was downward for the first 6 months in 1942, with a decrease of 576 non-carrier aircraft accidents over the same period the year before, an analysis by the Safety Bureau shows. At the same time there was an average of over 58,000 more pilots and student pilots.

Landing accidents, which accounted for 544 of the 1,331 mishaps, showed the most marked improvement. For the 1941 period, 1,097 of the accidents occurred on landings. Take-off, spin-stall and forced-landing accidents also showed a decided improvement. Next to landing, taxiing proved most hazardous with 261 accidents. Take-offs accounted for 149 accidents, and 159 pilots came to grief with forced landings.

Pilot Error High

As for the cause of the accidents, the analysis finds that faulty technique and carelessness still head the list. Powerplant failure and weather run third and fourth.

The comparison, however, showed a decrease in faulty technique accidents. And accidents resulting from instructional and powerplant failures were less frequent, indicating that students and pilots are paying more attention to flying and that a higher standard of maintenance is being carried out.

Spin-Stall 50 Percent Fatal

In a count of the fatalities, the analysis shows that spin-stall accidents took the highest toll of lives, and ranked next to fire in damage to aircraft. Over half of these accidents resulted in fatal injury. About 75 percent of the aircraft involved were demolished.

Collisions with other objects came next highest in fatalities. About 31 percent of these accidents resulted in loss of life, and nearly 53 percent of the aircraft involved were washed out.

Collisions with other aircraft took third place in fatal injuries, and structural failures ranked fourth.

Attention is called to the fact that not a single fatal accident occurred from accidents resulting from forced landings, while 9 percent of the simulated landings resulted in fatal injury. Only 5 percent of the aircraft involved in forced landing accidents were demolished, while 20 percent of the aircraft simulating forced landings were destroyed.

Seventy-two, or about 5 percent of the accidents occurring during the first half of the year indicated one or more

violations of Civil Air Regulations. The regulation most frequently disregarded was that of operating an uncertificated aircraft. The Safety Bureau attributes the high number of this type of violations to a possible misunderstanding of the Regulation under which aircraft are now "permanently" certificated. Twenty-one of the accidents involving violations resulted in fatal or serious injury. The most frequent of these violations were (1) students carrying passengers; (2) violations of CAR regarding acrobatic flying; (3) flying below safe minimum.

A more detailed account of this report covering non-air carrier accidents between January 1 and July 1, 1942, may be obtained by writing the CAA Publications and Statistics Division, Washington, D. C.

Casualty Rate High For Old Planes

Accidents involving aircraft 10 years old or more accounted for 10 percent of all the fatal accidents and about 20 percent of all the washout damage to aircraft in 1941.

An analysis of structural and powerplant failure in old planes made by the Safety Bureau showed that the most prevalent structural failure occurred in the landing gear and undercarriage. Wheels and brakes contributed the next highest number of failures.

Trouble originating in the engine system accounted for almost half of the powerplant failures causing accidents in old planes.

A copy of this report giving a detailed break-down of structural and powerplant failures in old planes may be obtained on request from the CAA Publications and Statistics Division, Washington, D. C.

Price Correction

In last month's Journal announcement was made of the two flight instruction books now on sale at the Superintendent of Documents, Government Printing Office. The instructor's manual, "Patter for Elementary Flight Maneuvers," Bulletin No. 31, is 15 cents a copy as previously announced. But the student's manual, "Fundamentals of Elementary Flight Maneuvers," Bulletin 32, is 20 cents a copy.



Airlines Free to Make New Express Contracts

The Civil Aeronautics Board has announced its approval of revised contracts between 12 domestic airlines and Railway Express Agency, Inc., which include modifications suggested by the Board.

Air transportation, the Board pointed out, has now reached the stage of development where it appears essential that the "air lines be freed of certain restrictions imposed by the Express Agency contracts in order that they will be in a position to move in whatever direction the public interest may require in the future development of cargo service."

Restraints Lifted

Restraints preventing air carriers from accepting express business from any person other than the Express Agency, and the Express Agency from making an agreement with another air carrier for a similar service without meeting certain restrictive conditions, are eliminated in the new contracts.

In addition, while contracts provide that the air carriers will establish rates to be charged by the Express Agency for the transportation of air express, they contain a provision by which the air carriers agree not to reduce rates to a point below twice rail express rates without the consent of the Express Company. This provision has been of no practical importance since air express rates have been maintained by the air carriers at a point much higher than twice the rail express rates. This provision should also be eliminated, the Board said, in order that air express rates may find their own proper level without regard to rates being charged for the transportation of express by rail.

The contracts also contained a provision by which the Express Agency was forbidden to enter into the air express business by operating its own aircraft and since, under the Civil Aeronautics Act, the Railway Express Agency could not perform such a function without securing the approval of the Board it was considered desirable to have this provision removed.

Affects 12 Airlines

The Board's order approving the revised agreements affected All American Aviation, Inc.; American Airlines, Inc.; Chicago and Southern Air Lines, Inc.; Colonial Airlines, Inc.; Continental Air

Lines, Inc.; Delta Air Corporation; Eastern Air Lines, Inc.; National Airlines, Inc.; Northwest Airlines, Inc.; Pennsylvania-Central Airlines Corporation; United Air Lines Transport Corporation; Western Air Lines, Inc.; and the Railway Express Agency, Inc.

The Board stated that it has been advised that revised contracts between the Express Agency and the other certificated air carriers will be filed in the immediate future. Pointing out that it could disapprove any contract or agreement "whether or not previously approved by it" that it finds adverse to the public interest or in violation of the Civil Aeronautics Act the Board stated that it was prepared to give "further consideration to a final determination of the Express Agency-air carrier relationship when the public interest warrants."

New Orleans—Guatemala City Route for Pan Am

Pan American Airways, Inc., has been granted a temporary 3-year operating certificate for mail, passengers, and express between New Orleans and Guatemala City, via Merida, Mexico, in a Board order signed by President Roosevelt.

Pan American now operates between Guatemala City and Balboa as part of its operations in Central and South America. By the addition of 1,075 miles of new route it can furnish transportation from New Orleans to Merida, to Guatemala City, there transferring its passengers from New Orleans to the Brownsville-Canal Zone flight. The Board said that the proposed operation could be integrated into Pan American's system with comparatively little expense since Pan American is rapidly approaching self-sufficiency in its Latin-American operations.

In the same order the Board denied the application of American Export Airlines, Inc. for a route between New Orleans and Balboa, Canal Zone via several Central American cities, pointing out that this would involve establishment of 1,950 miles of new route for Export with resultant expenses of establishing and maintaining facilities for such operation.

CAB Acts to Cut Passenger Fares Of 11 Airlines

Eleven domestic airlines have been ordered to show cause why they should not make a 10-percent reduction in passenger fares.

The Board's action followed a series of recent decisions ordering a .3-mill per pound-mile rate for transportation of mail by air in which it stated in each case that "early consideration" would be given to a reduction in passenger rates. The airlines affected by the order include American Airlines, Inc., Braniff Airways, Inc., Chicago & Southern Air Lines, Inc., Delta Air Corporation, Eastern Air Lines, Inc., National Airlines, Inc., Northwest Airlines, Inc., Pennsylvania-Central Airlines Corporation, Transcontinental & Western Air, Inc., United Air Lines Transport Corporation, and Western Air Lines, Inc.

Incomes Increase

In its show cause order the Board maintained that the net incomes reported by the respondents during the five months ending Nov. 30, 1942, were excessive and that the net operating incomes will or may continue to be excessive. In view of this the Board held that the rates, fares and charges "collected by each of the respondents for the transportation of passengers are and will be unjust and unreasonable."

The order pointed out that the amount of traffic of all classes transported by the carriers between July and November 1942 was little less than the amount for the same months of 1941, although the operations have been conducted with a much reduced number of aircraft, a number of them having been turned over to military operations. The average pay load carried on each aircraft during the latter part of 1942, therefore, substantially exceeded the corresponding averages for any preceding period, and the passenger and express revenues for each mile flown were correspondingly increased.

Discounts Suspended

The Board further stated that by suspending discounts on passenger and all special fares allowed by them, effective July 1, 1942, the carriers effected an increase in their average passenger revenue per revenue-passenger mile.

"The public interest in economic stabilization and price control," the Board said, "necessitates the restoration, insofar as consistent with the maintenance of the sound financial condition of the respondents, of the average passenger revenue per revenue-passenger mile to the approximate level existing before the elimination by the respondents on July 1, 1942, of all discounts on passenger and all special fares."

Aircraft Structural Testing

By B. L. SPRINGER

(Senior Aeronautical Engineer, Aircraft Engineering Division)

Introduction

The purpose of this paper¹ is to present a general review of some of the problems connected with structural testing of aircraft structures and a summary of the test methods commonly employed by the aircraft industry today. This review is primarily intended for those who may not be familiar with this phase of aeronautical engineering development of an airplane design. Because of its extensive scope, it will be possible to present only the broad aspects of the subject.

Most aircraft manufacturers recognize the necessity for thoroughly testing their product and willingly set aside considerable engineering time and money to do this. This takes some courage when it is realized that one complete airplane is sacrificed from production, and usually the first one, at that. In the present war, time and airplanes are all important; however, we cannot afford to risk placing a structurally deficient airplane in the hands of our fighting men or those engaged in transporting vital supplies. The structural record of United States aircraft equipment under all kinds of operational conditions is something of which we can all be proud. This is due, in no small part, to the program of structural testing to which every airplane type design is subjected prior to its being put into production.

Flight Demonstration

Flight test demonstrations have sometimes been used to substantiate yield load strength under limit load accelerations. These tests usually involve successive flight maneuvers resulting in a gradual approach to the specified load factors. Instrumentation employed in such tests ranges in the simplest case from merely an accelerometer to more complicated installations employing strain recording gages. Needless to say, a large amount of hazardous and expensive flight testing is required in order to cover all possible loading conditions. The final results in any case do not give an idea as to the ultimate strength of the structure.

Strain gage measurements during flight do, however, provide an excellent means for studying structures which are under rapid variation of stress. An excellent example of this is the present standard procedure of propeller stress measurements in flight. These measurements provide information concerning resonant frequencies, in the engine RPM range, to be avoided during flying. Other examples could be the study of cowlings, skin covering, and other local

structures subjected to high external air pressure loads. By means of such direct measurements, it would be possible to work backwards and establish design loadings. This may be necessary, particularly, in the case of extreme high speed aircraft where knowledge of such loadings is meager.

Ground (Static) Tests

Proof and Strength Tests.—Tests of aircraft structures are generally of two types, proof or yield load tests, and strength tests. Element tests for the purpose of establishing allowable design values are not discussed here.

It might be well to mention that the same test procedures can and often are employed on both military and civil type aircraft. It will therefore be of interest to note that the Army, Navy, and Civil Aeronautics Administration have under preparation an ANC Publication (ANC-6) on structural tests. The purpose of this publication will be to present mutually acceptable test procedures for the guidance of the aircraft industry.

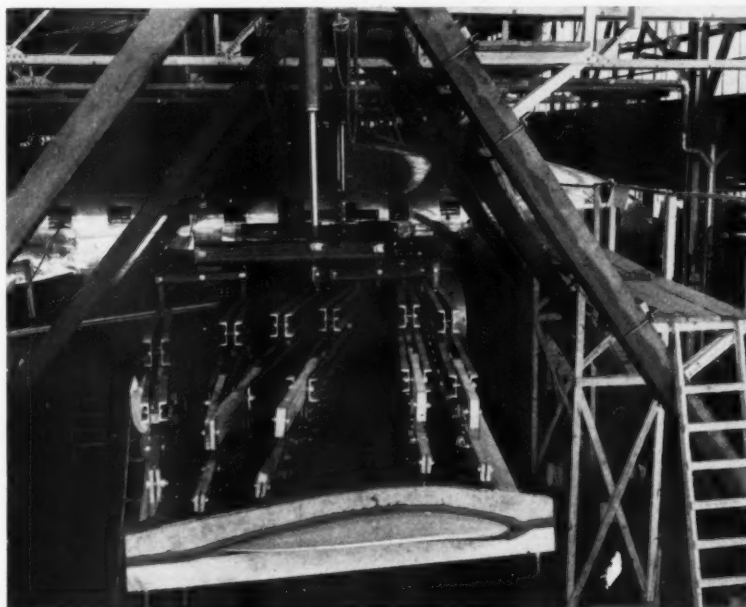
Stress Analyses

As a rule an aircraft manufacturer will make complete and conservative analytical investigations covering the strength of the airplane structure. This being so, the question immediately

comes to mind, "What is the value of stress analysis if in the end we have to static test the actual structure anyway?" Of course, before there is a structure to be tested one has to be designed. The analysis is indispensable in this phase, and is necessary to obtain an efficiently proportioned structure. Equipment and control installations, fuel tanks, special design features such as folding wings, retractable landing gears, cabin pressurization, entrance hatches and many other details, unfortunately, disturb structural continuity. This, in turn, raises doubts concerning the validity of an analysis. Even so, there are many types of construction which, in the light of much past test experience, can be accepted without test.

The latest advances in materials, structural designs, etc., will always make it difficult for analyses methods to keep pace, thus throwing more and more dependence on structural tests to give a quantitative answer. Modern airplane design requires testing to squeeze everything out of it. With the emphasis on "how much load will the structure take?", rather than on proving that it will surpass minimum strength requirements, the necessity for actual tests as a supplement to stress analysis data becomes more apparent.

Under proof load tests, generally the completely assembled structure is loaded



Typical test set-up of a complete airplane structure. (Curtiss-Wright Corporation, St. Louis Airplane Division.)

¹ This paper was presented at the January 11-15, 1943, SAE War Engineering Production Meeting, Detroit, Michigan.

by increments to the design yield load factor values. Deflection measurements are taken during the test to ascertain that no permanent set has occurred to the primary structure. Set may be indicated by a load deflection curve or by the zero load deflection after unloading. The primary value of such a test is that it validates the analysis methods up to the loading used and gives assurance of strength in excess of maximum expected limit load factors likely to be imposed on the aircraft. The exact amount of overstrength is, of course, not directly measurable from proof tests. Indirectly, however, adequate strain gage explorations in conjunction with the stress analysis should establish confidence in the ability of the structure to meet its ultimate strength requirements.

For structures which are unconventional and not readily amenable to stress analysis, the usual ultimate load test is, of course, the most dependable indication of strength. In these tests the structure is loaded beyond its yield load factor values to cover the specified factor of safety. The usual procedure is to "nurse" the structure through the several different design loading conditions to which it is subjected and then to load up to "destruction" in the most critical condition.

Planning of Tests

Testing large aircraft structures requires careful planning and rehearsal. In the first place it is usually impossible to simulate exact airload distribution; therefore, concentrated and distributed loading within the capabilities of available test equipment must be employed. Aircraft structural tests are not regarded as research projects and the method of testing which will most quickly give the answer is the rule. The points of application of loads to the structure must be carefully checked to avoid the possibility of local overload and risk of premature damage. This may require that special load applying and distributing blocks, plates, and fittings be designed and installed on the test article.

The problem of handling the structure for set up purposes itself is no easy one. Special fittings and jogs may be required for this. If numerous strain gage installations are to be employed in closed up structures, their installation and necessary wiring must be considered during fabrication of the test article.

Prior to actual testing a careful review of the loading program may be necessary to acquaint personnel conducting the test with the procedure to be followed. Generally speaking, the order of loading is important since thoughtless application of a load may overstress and damage the structure prematurely. Coordination in applying loads uniformly and symmetrically to avoid inadvertent application of torsion stresses is essential. The use of a public address and interconnected telephone systems has been found necessary by many large companies to achieve this coordination.

To avoid possible mistakes, a system for reporting and recording results during the test is generally employed. Deflection and strain gage measurements plotted up as the test progresses will indicate any unusual developments and save time in the long run.

Finally, during planning of the test, thought must be given to the safety of personnel concerned. Scaffolding should be rigid and provided with safety rails. Since it is necessary to make a close inspection of all parts of the structure under load, provisions should be made to catch weights and falling structures in case something should suddenly give away. In heavily loaded structures considerable energy is stored up and failed parts may be thrown about with great force.

Components Tested

In order to present a general picture of the extent of structural tests of a modern airplane, the following outline of a typical program of tests may be of help:

1. WING STRUCTURE: (a) Wing beam structure, or critical section; (b) ribs; (c) aileron hinge supports; (d) fittings and splice joints; (e) aileron and flap structures; (f) miscellaneous elements such as cutout reinforcements, stress carrying doors, shear panels, etc.

2. FUSELAGE STRUCTURE: (a) Frames and rings; (b) wing and tail surface attachment fittings; (c) fuselage section including door cutouts, discontinuous structure, etc.; (d) equipment installations such as seats and berths, safety belts, baggage compartment structures, etc.

3. TAIL SURFACES: (a) Horizontal surfaces including tab structures; (b) vertical surfaces including tab structures; (c) typical ribs and bulkheads; (d) fittings.

4. LANDING GEAR: (a) Assembly tests; (b) shock absorption tests.

5. ENGINE NACELLE: (a) Mount and nacelle structures; (b) cowling and cowl flaps.

6. CONTROL SYSTEMS.

7. MISCELLANEOUS: (a) Pressure and vibration tests of fuel and oil tanks; (b) vibration survey of aircraft; (c) specimen tests for determination of allowable strengths.

The above outline lists only the most typical tests and many manufacturers frequently go considerably beyond this. Except for certain cases considered of special interest, it is not intended in this paper to go into detail relative to the nature of these tests.

Loading Systems

In testing wing structures one of the problems is applying the loads to the surfaces to simulate air load pressure distribution. The distribution of load spanwise, chordwise, and between the upper and lower wing surfaces makes this more difficult. Several schemes for loading wing surfaces have been used by various companies.

These include everything from the commonly used sandbags placed on one surface only to more elaborate set-ups with rubber tension pads glued over the wing surfaces. Some other methods used include special loading clip attachments on one or both surfaces, use of hydrostatic pressure, and bearing blocks on one surface only. Any of these methods may have advantages over the others, depending on the nature of the test. Unavoidably, all methods have a common disadvantage, in varying degree, of obscuring a view of the structure under load. Some have possible unconservative influences on test results, especially where unjustifiable stabilization of compression structures is afforded.

The generally preferred method of applying loads is by the use of jacks in conjunction with simple leverage or whistle-tree type beam arrangements. Hydraulic jack systems are being more and more favored, since they have the great advantage that the loads drop off immediately at failure. This helps to avoid excessive damage to the structure under test, allowing easier determination of the location of original failure and permitting further testing after reinforcement. For the very large structures, or, for elements of large structures which have many loading and reaction points the complete test set-up may involve many parallel sets of beam arrangements.

Strain Gages

The use of strain gages in tests is becoming more and more extensive. The development of the electrical resistance type elements which can be applied almost anywhere is making their use more practicable. Strain measurements should, in the future, provide us with more exact knowledge of the behavior of stresses distributed at such places as fittings, cutout openings, and on stringer stiffened panels. The benefits from a knowledge of such stress distribution are twofold: they can provide needed information for further refinement of stress analysis procedure methods resulting in the design of more efficient structures and, secondly, they might serve a very useful purpose in making possible "non-destructive" structural tests. The latter case has the appealing possibility of utilizing strain measurements to predict the ultimate load strength of the structure without actually loading to the failure point. It is conceded that this method essentially involves extrapolation to higher stress values; however, it holds enough promise to warrant further consideration.

Strain gage control during tests will give warning of approach to critical stresses and should point the way to design modifications which will allow getting the most out of the structure.

Stress measurements on structures where the direction of the principal stresses are unknown usually involve simultaneous measurement of strains in three different directions. The usual equilateral triangle arrangement of gages, called a rosette, provides the required unit strain measurements. From

these measurements it is possible to compute the principal stresses using well known mathematical equations. The difficulty of this procedure appears to be the time required to work up the results. The development of mechanical and electrical stress computers to facilitate this work should permit more extensive use of rosette gage measurements.

Wood Aircraft

The testing of wood aircraft structures requires considerations of certain new factors which are not usually thought of in connection with tests of metal structures. The most important of these are: (a) Rate of loading and time under load; (b) loading history; (c) temperature and humidity control of the test article; (d) careful control and selection of material of structure as regards moisture content and specific gravity.

It is not intended in this paper to discuss the reasons for the above except to point out that these factors can have a large influence on final test results. There is much to be learned concerning the relative effects of these factors on ultimate strength and the development of a dependable method of correcting test results for these effects.

Pressurized Cabins

Pressurized cabin fuselage structures introduce another element of uncertainty in an already involved structural problem. The effects of internal pressure appear to be beneficial in stabilizing stiffened skin structures. Pressure has adverse effects, however, on cutouts, joints, frames, etc., and therefore any test of the fuselage structure should include pressurization. The pressure should cover the range from no pressure (over atmospheric) to the maximum permissible. The basic flight condition design loads should be superimposed with this pressure range.

Windshield Tests

Many cases of near accidents caused by collision of birds with aircraft windshields have been reported by air carriers. This has pointed to the desirability of providing more strength in the windshield and its attaching structure than has heretofore been considered necessary. Considerable development test work is now under way which will possibly lead to the formulation of a standard impact test procedure for air carrier type aircraft windshield installations. In its simplest form, this could consist of dropping a prescribed mass from a specified height onto an actual windshield assembly. This would provide a measurement of the ability of the windshield to give the basic amount of required protection to the occupants.

Drop Tests

Several methods are available for testing landing gear shock systems for energy absorption. On small airplanes the usual procedure is to drop the complete airplane in various attitudes from a prescribed height. In larger airplanes

the gear is independently dropped in a special jig, either vertically or at the end of a rotating beam. The airplane mass involved is simulated in such tests. In some cases the effects of wing lift are allowed for by suitable adjustment of this mass and height of free drop. The load factors developed by the gear are usually measured either by a direct recording type accelerometer or by means of space time records.

Operation Tests

In control system operation tests the complete system is actually operated under its prescribed load. This usually involves the application of the proper control surface hinge moment to the actual system as assembled on the aircraft and then manipulating the controls from the pilot's seat. Such tests are very important since, in addition to proving that the system will perform its intended functions, they help locate and improve troublesome design details which, if uncorrected, might endanger the safety of aircraft. For large, high altitude aircraft which have power boost systems, it may be more practicable to mock-up the control system outside the actual aircraft for operation tests. Simulation of temperature range effects is becoming more and more important and the mocked-up system readily lends itself to such tests.

Vibration and Flutter

Ground tests—An increasingly important phase of structural testing is the experimental determination of the vibration characteristics of the completed aircraft structure. Natural frequency values, position of nodal lines, modes of vibration, and the internal structural damping are determined experimentally. These data are useful in theoretical calculations of the flutter speeds. The type of test equipment used to obtain these results consists of a variable speed motor driven exciter, usually the eccentric weight type, and electrical recording pickup equipment. The photographic records obtained from the recorder, when analyzed, provide the information desired.

Flight tests—Electrical measurements of vibration amplitudes and frequencies of aircraft structures during flight tests in connection with buffeting and flutter problems studies have been successfully applied by some companies. Such tests require the installation of the recording equipment in the airplane. The electrical pickups, usually the accelerometer type, are strategically located on the portions of the structure under study. Excitation may be either from natural causes, such as aerodynamic buffeting, engine RPM's etc., or from an exciter installed in the airplane for the purpose. In the case of the latter method, extremely careful control must be employed in conducting the tests so as to gradually approach the critical flutter speeds and frequencies. The method usually followed is to plot a continuous curve of amplitudes versus speed and to stop the test when a "pickup" tendency is noted.

Model Tests

Photoelastic methods—Photoelastic studies of the stress distribution in highly indeterminate rigid framework structures have been used as a supplement to stress analysis. This method, however, requires a fairly complete knowledge of the details of the prototype structure before the transparent model can be made. Further, the studies are not applicable beyond the elastic range. Some test results in the form of bending and shear stress distribution have provided a good check on analytical analyses.

Scale models—Some work has been done in connection with the use of small scale structural models to simulate the large aircraft structure. Such models must reproduce in miniature the most important characteristics of its prototype. Since the size scale effects of the structural elements may vary considerably for the various possible modes of failure, exact simulation, except for some special critical sections, will be difficult to achieve. Nevertheless, model testing seems to present enough promise to warrant further exploration of its possibilities.

Conclusions

The structural test program is an important part of the development of a modern airplane. With increase in size of aircraft, jigs and loading devices of unprecedented size will be required. For the huge airplane of tomorrow the structures may be so large as to make it more practicable to rely on section tests or model tests.

The most satisfactory method of increasing the payload of the aircraft seems to be in utilizing every bit of overstrength in the aircraft structure. Strength testing appears to be the only direct and practicable manner for measuring this. The expense and trouble of such tests can be repaid many times over during the life of a fleet of airplanes if only a few percent increase in payload results. This consideration will undoubtedly induce aircraft manufacturers to conduct far more structural tests than heretofore have been felt necessary.

Opinions Available

The following Civil Aeronautics Board Opinions of Volume 3 are now available in printed form as advance sheets prior to their inclusion in a bound volume:

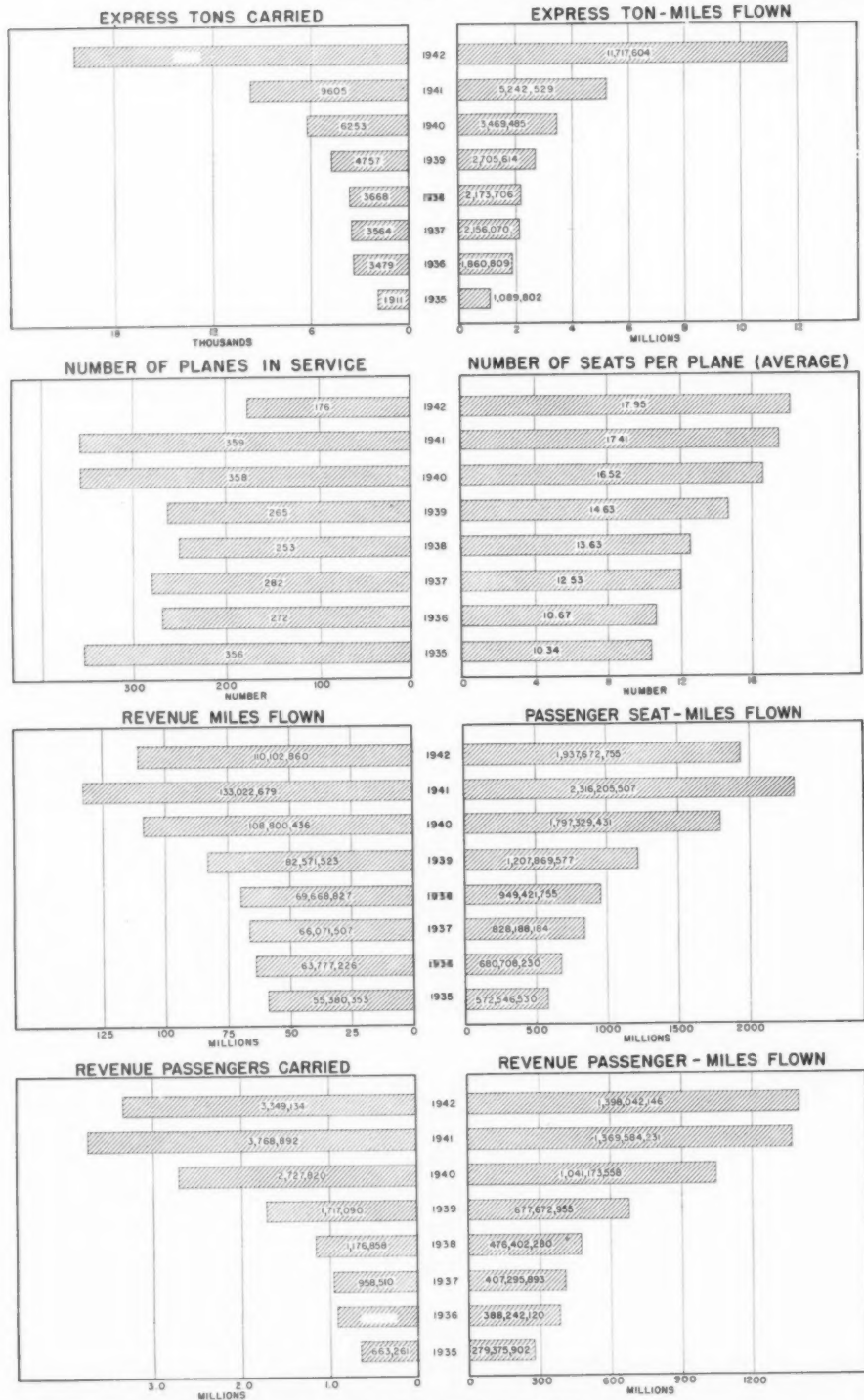
Opinion No. 42, INLAND AIR LINES, INC., Mail Rates for Routes Nos. 28 and 35; Docket No. 632.

Opinion No. 43, WEST COAST AIRLINES, INC., Pacific Coast Air Pickup—Delivery Service; Docket No. 436.

Opinion No. 44, TRANSCONTINENTAL & WESTERN AIR, INC., Temporary Service to Terre Haute; Docket No. 747.

Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 5 cents each. When ordering, include the opinion serial number and the docket number as well as the opinion title.

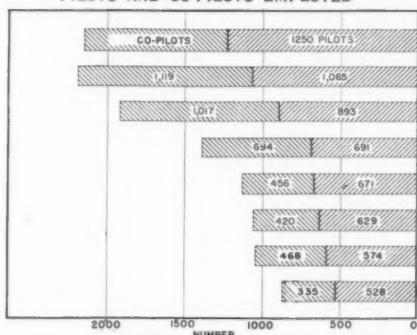
EIGHT YEARS OF DOMESTIC



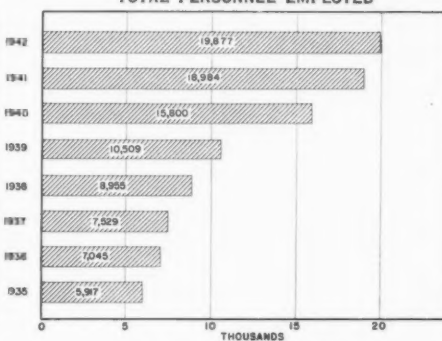
Note: In top left graph express tons carried for 1942 should total 20,051.
In bottom left graph revenue passengers carried in 1936 should total 911,148.

AIR CARRIER PROGRESS

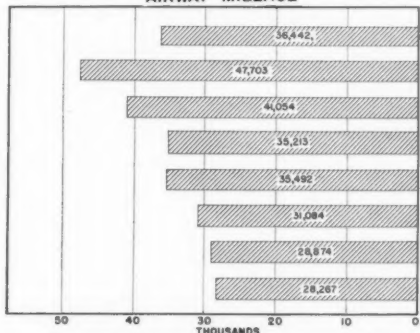
PILOTS AND CO-PILOTS EMPLOYED



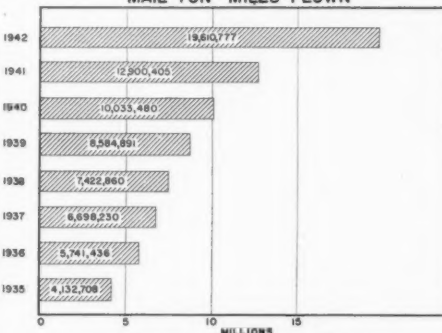
TOTAL PERSONNEL EMPLOYED



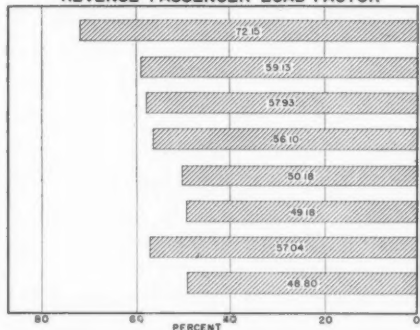
AIRWAY MILEAGE



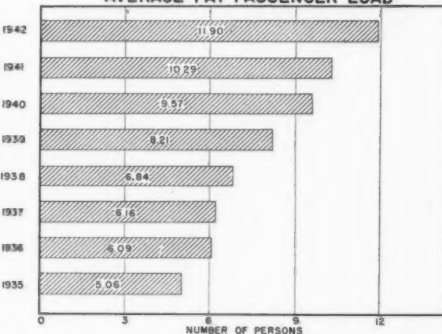
MAIL TON - MILES FLOWN



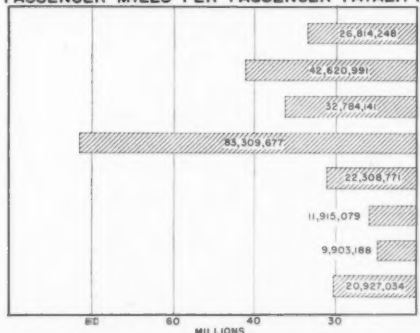
REVENUE PASSENGER LOAD FACTOR



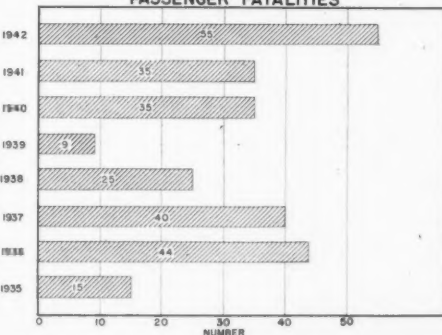
AVERAGE PAY PASSENGER LOAD



PASSENGER MILES PER PASSENGER FATALITY



PASSENGER FATALITIES



Note: In top left graph co-pilots employed in 1942 should total 900.

Domestic Air Carrier Operation Statistics for the Month of January 1943

Operator	Routes operated	Revenue miles flown	Revenue passengers carried	Revenue passenger miles flown	Express carried (pounds)	Express pound-miles flown	Passenger seat-miles flown	Revenue passenger load factor (percent)
All American Aviation, Inc.	Pittsburgh-Huntington, Philadelphia, Williamsport, Jamestown, etc.	67,448	0	0	4,453	559,815	0	-----
American Airlines, Inc.	Dallas-Los Angeles	652,934	12,625	10,379,311	163,892	163,044,958	12,060,172	86.06
	New York-Chicago	328,688	10,819	4,002,481	470,741	208,714,911	6,187,040	64.69
	Boston-New York	82,278	7,433	1,272,351	127,518	20,208,822	1,069,822	76.20
	Boston-Cleveland	14,107	810	119,545	14,474	2,309,328	296,247	40.35
	Cleveland-Nashville	56,872	3,795	843,999	66,203	17,516,111	1,184,936	71.23
	New York-Fort Worth	512,866	13,155	8,025,827	209,810	131,339,847	9,801,800	81.88
	Washington-Chicago	121,160	3,703	1,583,666	85,985	33,398,717	2,306,488	68.66
	Chicago-Fort Worth	106,363	3,796	1,750,251	75,874	45,818,253	2,190,986	79.88
	Buffalo-Toronto	1,824	138	10,488	2,413	183,388	38,304	27.38
	El Paso or Fort Worth-Mexico City	125,564	1,110	1,069,951	7,286	3,695,570	2,259,410	47.36
	Total	2,004,656	57,384	29,057,870	1,224,196	626,229,905	37,995,205	76.48
Brantiff Airways, Inc.	Chicago-Dallas	160,935	4,291	2,312,213	62,642	35,695,830	2,619,033	88.28
	Dallas-Brownsville	119,343	6,759	1,671,322	37,857	9,836,451	2,051,641	81.46
	San Antonio-Houston and Corpus Christi	12,213	639	120,553	2,593	491,815	202,160	59.63
	Total	292,491	11,689	4,104,088	103,092	46,024,096	4,872,834	84.22
Chicago & Southern Air Lines, Inc.	Chicago-New Orleans	134,387	4,886	1,947,648	51,037	21,113,191	2,798,636	69.59
	Memphis-Houston	29,501	891	326,175	4,493	2,045,660	609,858	53.48
	Total	163,888	5,777	2,273,823	55,530	23,158,851	3,408,494	66.71
Continental Air Lines, Inc.	Denver-El Paso	89,199	2,745	820,002	6,015	2,052,323	991,389	82.71
	Pueblo-Tulsa	37,760	1,143	277,610	2,455	401,859	396,840	69.96
	Total	126,959	3,888	1,097,612	8,470	2,454,182	1,388,229	79.07
Delta Air Corporation	Charleston & Savannah-Fort Worth	121,875	5,486	2,214,735	23,601	9,729,398	2,569,416	86.20
	Atlanta-Cincinnati	43,018	2,142	673,275	13,540	4,347,133	911,358	73.88
	Total	164,893	7,628	2,888,010	37,141	14,076,531	3,480,774	82.97
Eastern Air Lines, Inc.	New York-Brownsville & San Antonio	360,293	10,141	5,725,941	106,971	57,220,880	7,224,830	79.25
	New York-Miami	455,871	10,724	6,171,496	137,156	111,006,096	7,841,296	78.71
	Chicago-Jacksonville	158,770	5,668	2,469,734	63,842	29,655,203	3,037,954	81.30
	Atlanta-Tampa	21,879	1,024	345,437	7,767	3,033,832	459,030	75.47
	Total	996,813	27,557	14,713,608	315,736	200,916,011	18,563,020	79.26
Inland Air Lines, Inc.	Denver-Great Falls	45,598	855	301,482	2,379	388,761	538,640	55.97
	Cheyenne-Huron	22,480	0	0	198	47,960	0	-----
	Total	68,078	855	301,482	2,577	436,721	538,640	55.97
Mid-Continent Airlines, Inc.	Minneapolis-Tulsa	62,115	1,576	469,895	7,303	1,542,766	774,095	60.70
	Minneapolis-St. Louis	27,158	0	0	871	237,216	0	-----
	Total	89,273	1,576	469,895	8,174	1,779,982	774,095	60.70
National Airlines, Inc.	Jacksonville-Miami	50,914	2,469	577,424	7,833	1,885,541	712,796	81.01
	Jacksonville-New Orleans	94,662	2,909	1,043,820	9,671	3,396,359	1,325,272	78.76
	Total	145,576	5,378	1,621,244	17,504	5,281,900	2,038,068	79.55
Northeast Airlines, Inc.	Boston-Presque Isle & Moncton	45,320	1,313	325,205	2,512	535,373	955,920	34.02
Northwest Airlines, Inc.	Chicago-Seattle	275,907	5,171	2,612,853	125,364	85,287,814	3,932,503	66.44
	Minneapolis-Duluth	4,579	0	0	160	22,880	0	-----
	Total	280,486	5,171	2,612,853	125,524	85,310,694	3,932,503	66.44
Pennsylvania-Central Airlines Corp.	Norfolk-Detroit	130,636	9,329	1,953,112	162,498	28,900,927	2,683,965	72.77
	Detroit-Milwaukee	11,721	530	87,088	3,620	598,279	246,141	35.63
	Pittsburgh-Buffalo	8,284	296	61,390	4,020	803,858	173,964	35.29
	Pittsburgh-Birmingham	31,962	947	286,396	3,148	626,570	666,939	44.44
	Total	182,603	11,102	2,398,586	173,286	30,929,634	3,771,009	63.61
Transcontinental & Western Air, Inc.	New York-Los Angeles	848,901	15,962	10,027,757	499,784	355,780,273	13,172,769	76.12
	Dayton-Chicago	11,691	703	154,601	19,281	4,256,264	229,063	67.33
	Boulder City-San Francisco	21,762	356	142,860	171	80,799	391,719	36.51
	Kansas City-Chicago & Pittsburgh	246,282	5,265	2,448,041	180,288	96,209,233	3,357,575	84.82
	St. Louis-Detroit	38,398	2,308	576,593	40,985	9,947,285	674,048	85.54
	Total	1,167,034	24,524	13,749,991	740,509	466,279,764	17,825,713	77.14
United Air Lines Transport Corporation	New York-San Francisco	1,175,125	15,790	13,518,713	574,991	493,239,175	17,193,949	78.62
	Salt Lake-Seattle	97,433	1,952	1,389,449	24,183	17,192,919	1,852,358	75.01
	Los Angeles-Seattle	329,591	13,498	5,321,328	122,959	54,106,450	6,300,129	87.04
	Seattle-Vancouver	1,202	62	10,284	83	10,624	24,453	42.06
	Total	1,603,351	31,302	20,439,684	722,216	564,549,168	25,370,889	80.56
Western Air Lines, Inc.	San Diego-Salt Lake City	76,664	2,961	1,198,392	52,772	25,008,988	1,429,490	83.83
	Salt Lake City-Great Falls	26,419	616	232,527	4,740	1,525,263	322,599	72.08
	Great Falls-Lethbridge	6,308	167	22,861	1,319	121,348	89,600	25.51
	Total	109,391	3,744	1,453,780	58,831	26,655,599	1,841,689	78.94
	Grand total	7,508,260	198,888	97,507,731	3,599,751	2,095,178,226	126,757,082	76.92

CIVIL AERONAUTICS BOARD

OFFICIAL ACTIONS

Abstracts of Opinions, Orders, and Regulations

ORDERS

ORDER No. 2164..... February 27, 1943

Ordered certain air lines to show cause why the Board should not find that the rates, fares and charges collected for the transportation of passengers are unjust and unreasonable.

ORDER No. 2165..... March 1, 1943

Temporarily granted permission to Pan American Airways, Inc., and Pan American-Grace Airways, Inc., to use continuous white light as rear position equipment in scheduled operations.

ORDER No. 2166..... March 2, 1943

Permitted Pan American Airways Co. (Del.) to withdraw their petition for an order fixing and determining the rates of compensation for the transportation of mail between the U. S. and Africa; ordered withholding information from public disclosure.

ORDER No. 2167..... March 2, 1943

Revoked student pilot certificate of Samuel P. Hudgins for certain violations of the Civil Air Regulations.

ORDER No. 2168..... March 2, 1943

Limited for 6 months the use of each pilot certificate held by Kenneth D. Johnson to piloting civil aircraft only while receiving or giving instruction in the War Training Service, while making check flights when accompanied by instructors or inspectors of the Civil Aeronautics Administration, or while on military duty because of violations of the Civil Air Regulations.

ORDER No. 2169..... March 2, 1943

Approved amended agreements filed by and between certain air lines and the Railway Express Agency, Inc.

ORDER No. 2170..... March 4, 1943

Approved amendment to Contract CAB No. 187 between certain air lines re an agreement governing local and joint passenger tariff.

ORDER No. 2171..... March 5, 1943

Approved interlocking relationships re applications of Thomas W. Bowers and American Export Airlines, Inc.

ORDER No. 2172..... March 5, 1943

Revoked private pilot certificate held by Edward Hoadley for certain violations of the Civil Air Regulations.

ORDER No. 2173..... March 5, 1943

Temporarily suspended private pilot certificate held by Duff L. Floyd for certain violations of the Civil Air Regulations.

ORDER No. 2174..... March 8, 1943

Rescinded Order, Serial No. 1773, which temporarily suspended service by Delta Air Corporation at Monroe, La.

ORDER No. 2175..... March 8, 1943

Consolidated for hearing applications of Pan American Airways, Inc., for amendment of its certificate of public convenience and necessity.

ORDER No. 2176..... March 9, 1943

Granted Eastern Air Lines, Inc. permission to serve Raleigh, N. C., through the use of the Raleigh-Durham airport. (Effective March 15, 1943.)

ORDER No. 2177..... March 8, 1943

Denied petition of H. G. Harper, Jr., for a waiver of section 24.10 of the Civil Air Regulations.

ORDER No. 2178..... March 3, 1943

Denied motion and request for oral argument by Chicago and Southern Air Lines, Inc., re compensation for the transportation of mail over routes Nos. 8 and 53.

ORDER No. 2179..... March 3, 1943

Denied petition and request for oral argument by Braniff Airways, Inc., re compensation for the transportation of mail over routes Nos. 9, 15, and 50.

ORDER No. 2180..... March 3, 1943

Denied motion and request for oral argument by National Airlines, Inc., re compensation for the transportation of mail over routes Nos. 31 and 39.

ORDER No. 2181..... March 3, 1943

Denied motion and request for oral argument by Delta Air Corporation re compensation for the transportation of mail over routes Nos. 24 and 54.

ORDER No. 2182..... March 10, 1943

Withheld from publication, testimony and exhibits of All American Aviation, Inc., re their petition for an order fixing and determining the rate of compensation for the transportation of mail over route No. 49.

ORDER No. 2183..... March 10, 1943

Revoked student pilot certificate held by Lee Wenner for certain violations of the Civil Air Regulations.

ORDER No. 2184..... March 10, 1943

Temporarily suspended student pilot certificate held by Herman E. Lever for certain violations of the Civil Air Regulations.

ORDER No. 2185..... March 8, 1943

Prescribed the use of CAB Form 2380—Report of Financial and Operating Statistics of International Air Carriers. (Effective January 1, 1943.)

ORDER No. 2186..... March 16, 1943

Prescribed Amendment No. 1 to the Uniform System of Accounts for International Air Carriers (CAB Form 2380 Manual).

ORDER No. 2187..... March 12, 1943

Revoked student pilot certificate held by John Leroy Whitted for certain violations of the Civil Air Regulations.

ORDER No. 2188..... March 12, 1943

Approved agreements CAB Nos. 40, 77, 68, 33, and 204 filed under section 412 (a) of the Act by and between certain airlines and Railway Express Agency, Inc.

ORDER No. 2189..... February 26, 1943

Authorized issuance of temporary certificate of public convenience and necessity to Pan American Airways, Inc., authorizing air transportation from New Orleans to Cuba and Central America; denied certain applications of American Export Airlines, Inc.

ORDER No. 2190..... March 16, 1943

Temporarily suspended student pilot certificate held by Charles D. Gunn for certain violations of the Civil Air Regulations.

ORDER No. 2191..... March 16, 1943

Revoked student pilot certificate held by Herbert E. Meredith for certain violations of the Civil Air Regulations.

ORDER No. 2192..... March 16, 1943

Authorized the taking of depositions in the matter of E. E. Basham, Sr., holder of airline transport pilot certificate No. 2440.

ORDER No. 2193..... March 17, 1943

Revoked student pilot certificate held by Victor L. Geisen for certain violations of the Civil Air Regulations.

ORDER No. 2194..... March 17, 1943

Revoked private pilot certificate held by John H. Kendall for certain violations of the Civil Air Regulations.

ORDER No. 2195..... March 17, 1943

Revoked mechanic certificate held by Gunnar V. Moeller for certain violations of the Civil Air Regulations.

ORDER No. 2196..... March 18, 1943

Modified and released opinion re petition of Northeast Airlines, Inc., for an order fixing and determining the rates of compensation for the transportation of mail over Route No. 27. (Opinion and order.)

ORDER No. 2197..... March 19, 1943

Denied petition of Walter Thompson for a waiver of Sec. 20.102 of the Civil Air Regulations.

ORDER No. 2198..... March 19, 1943
Directed Pacific Alaska Airways, Inc. (now by merger Pan-American Airways, Inc.), to show cause why the Board should not make final their findings and conclusions regarding compensation paid them for the transportation of mail on the routes between Seattle, Wash., and Fairbanks, Alaska, for the period ending August 13, 1942; withheld Part 2 of the Statement from publication.

ORDER No. 2190..... March 22, 1943
Denied petition of the Administrator for reconsideration of order No. 2134.

ORDER No. 2200..... March 24, 1943
Suspended student pilot certificate held by James D. Waldrop for certain violations of the Civil Air Regulations.

ORDER No. 2201..... March 24, 1943
Revoked air agency certificates held by R. Stuart Weeks for certain violations of the Civil Air Regulations.

ORDER No. 2202..... March 25, 1943
Granted temporary exemption to Harold Gillam from the provisions of section 401A of the act insofar as they would otherwise prevent him from engaging in the transportation of persons, property, and mail to and from Farewell, Alaska.

ORDER No. 2203..... March 22, 1943
Instituted an investigation re local-feeder-pickup air services.

ORDER No. 2204..... March 29, 1943
Approved interlocking relationships of R. E. Woodruff and Railway Express Agency, Inc.

ORDER No. 2205..... March 29, 1943
Revoked Order No. 1778 in so far as it authorized suspension of service to and from Watertown, S. Dak., by Mid-Continent Airlines, Inc. (Effective 30 days from date of order.)

ORDER No. 2206..... March 31, 1943
Limited each pilot certificate held by Earl Lundhigh during a period of twelve months, to the piloting of civil aircraft only while receiving instruction, making check flights accompanied by instructors or inspectors of the Administrator of Civil Aeronautics or while employed by the Department of War or the Department of Navy; the limitation effective for a period of twelve months.

ORDER No. 2207..... March 31, 1943
Limited student pilot certificate held by Hugh A. Metz and any pilot certificate he may acquire for a period of one year, to the piloting of civil aircraft while taking flight tests from inspectors for the Administrator of Civil Aeronautics, while making check flights accompanied by instructors or inspectors for the Administrator of Civil Aeronautics, or while on duty with the Civil Air Patrol; the limitation effective for a period of one year.

ORDER No. 2208..... March 31, 1943
Approved agreement, CAB No. 81, between Transcontinental and Western Air, Inc., and Railway Express Agency, Inc.

ORDER No. 2209..... March 31, 1943
Authorized the taking of depositions re complaint filed against E. E. Basham, Sr., holder of Airline Transport Pilot Certificate.

REGULATIONS

REGULATION No. 263..... February 26, 1943
Effective February 26, 1943.

Special Regulation Serial No. 252 is amended by striking the words "February 26, 1943," and inserting in lieu thereof the words "April 26, 1943."

REGULATION No. 264..... March 1, 1943
Effective March 1, 1943.

WAIVER OF THE REQUIREMENTS OF SECTION 40.2611 (B) OF THE CIVIL AIR REGULATIONS WITH RESPECT TO DELTA AIR CORPORATION.

Having had under consideration the regular use of the new Monroe Airport near Monroe, La., in scheduled air transportation, the Board finds that:

1. A new airport has been constructed on the site of the Selman Airport, Monroe, La., which is adequate for regular use by aircraft operated in scheduled air transportation, being located in level terrain and having 3 unobstructed runways, the shortest of which is 5,000 feet;

2. First pilots serving in air transportation for Delta Air Corporation on routes touching Monroe, La., have had an opportunity to become familiar with the new Monroe Airport through constant examination from the air so that compliance with the provisions of the Civil Air Regulations requiring the first pilot to have landed at least once at such airport may not be required in the interest of safety if the familiarity of the first pilot with the new Monroe Airport is sufficiently demonstrated as hereinafter provided:

Now, THEREFORE, It is ordered that: Any first pilot listed in the Delta Air Corporation Airman Operations Specifications on February 28, 1943, who is qualified as competent to operate an aircraft in scheduled air transportation between Atlanta, Ga., and Fort Worth, Tex., on February 28, 1943, may pilot aircraft in scheduled transportation for said carrier into and out of the new Monroe Airport, Monroe, La., upon furnishing evidence satisfactory to a representative of the Administrator of the pilot's thorough familiarity with the form and condition of the airport and with the location and nature of any obstructions in the vicinity.

REGULATION No. 265..... March 8, 1943

AMENDMENT No. 5 TO SECTION 202.1 OF THE ECONOMIC REGULATIONS—FORMS OF REPORTS OF FINANCIAL AND OPERATING STATISTICS.

1. Part (b) of section 202.1 of the Economic Regulations is hereby amended to read as follows:

"(b) Each other air carrier engaged in regularly scheduled air transportation (not including, however, foreign air carriers) shall for all periods subsequent to January 1, 1943, make periodic reports of financial and operating statistics to the Board using the appropriate schedules of the Report of Financial and Operating Statistics of International Air Carriers, CAB Form 2380, and such amendments thereto as may hereafter be approved by the Board: *Provided*, That any such air carrier may request the approval of the Board to make its reports in accordance with the provisions of the Report of Financial and Operating Statistics of Domestic Air Carriers, CAB Form 2780, and the amendments thereto, and upon obtaining the approval of the Board shall thereafter make its reports in the manner prescribed pursuant to part (a) of this Section. Reports of air carriers reporting on CAB Form 2380 shall be made in accordance with, and shall be filed with the Secretary of the Board at such times as are specified in, the instructions relating to reporting procedure contained in section 37 of the Uniform System of Accounts for Inter-

national Air Carriers, dated January 1, 1943 (CAB Form 2380 Manual), and such amendments thereto as may hereafter be approved by the Board."

2. This amendment shall become effective March 8, 1943.

REGULATION No. 266..... March 16, 1943
Effective March 16, 1943.

Notwithstanding the provisions of Part 20 of the Civil Air Regulations, military personnel on active or reserve status assigned by the Army, Navy, Marine Corps, or Coast Guard of the United States for pilot training to the Civil Aeronautics Administration War Training Service shall be deemed to have met the requirements of sections 20.104 and 20.730 of the Civil Air Regulations. Such trainees may pilot aircraft without being in possession of a medical certificate or other certificate of physical fitness only during the period that they are receiving student pilot training from the Civil Aeronautics Administration War Training Service.

This regulation shall be effective for the duration of the war and not more than 6 months thereafter.

REGULATION No. 267..... March 17, 1943
Effective March 17, 1943.

Military airplanes of the United States making ferry flights over civil airways under contract flight rules, in case of military necessity, may take off from, land at, or fly over airports where the local visibility conditions are below the minimum visibility requirements for operation under contract flight rules, if the visibility elsewhere along the civil airways to be flown is above the minimum required by contract flight rules.

This regulation shall terminate at the end of the war.

REGULATION No. 268..... March 19, 1943
Effective March 19, 1943.

Special Regulation Serial No. 252 is amended by striking the words "April 26, 1943," and inserting in lieu thereof the words "April 1, 1943."

AMENDMENT 20-2..... February 22, 1943
Effective February 22, 1943.

Section 20.142 of the Civil Air Regulations is amended as follows:

1. Substitute a comma for the period at the end of paragraph (b) and insert thereafter the word "or".

2. Add a new paragraph (c) to read as follows:

"20.142 Citizenship. * * *
(c) A person who is in sympathy with the objectives of the United States and who is a trustworthy citizen of a friendly foreign government not under the domination of, or associated with, any government with which the United States is at war. The effectiveness of the certificate issued to such person shall in any event terminate 6 months after the war and may be terminated by the Administrator at any time without notice. Upon application to the Administrator the war limitation clause may be removed whenever the government of the country of which he is a citizen grants the reciprocity required in paragraph (b) of this section."

AMENDMENT 20-3..... March 2, 1943
Effective March 2, 1943.

Part 20 of the Civil Air Regulations is amended as follows:

1. Amend section 20.37 to read as follows: "20.37. *Airman identification card*. An airman identification card shall be a part of a pilot certificate and shall be kept in the personal possession of the pilot at all times when piloting aircraft. Such card shall be issued by the Administrator and contain the pilot's fingerprints, picture, and signature or shall be a document satisfactory to the Administrator issued by the Army, Navy, Marine Corps, or Coast Guard identifying the pilot as a member thereof."

2. Amend the table of contents to conform to this amendment.

AMENDMENT 20-4----- March 8, 1943
Effective March 8, 1943.

Part 20 of the Civil Air Regulations is amended as follows:

1. Amend section 20.129 to read as follows:

"20.129. *Military competence.* An applicant, who within the preceding sixty days has been on active duty with flying status for a period of not less than 6 months as a member of the Army, Navy, Marine Corps, or Coast Guard of the United States or the armed service of any Government allied with the United States, shall be deemed to have met the aeronautical knowledge, experience, and skill requirements of the Civil Air Regulations for the issuance of a pilot certificate of appropriate type and grade:

(a) If he submits to an inspector of the Administrator written proof of an honorable discharge or return to inactive reserve status together with a certificate from the appropriate military officer in charge of flying showing that the applicant was, at the time of separation from the service, on solo flying status as a rated military pilot; and setting forth the pilot rating held by him and the type, class, and horsepower of aircraft he had been found competent to pilot;

(b) If the requirements for the military pilot rating held are at least equivalent to the requirements of the Civil Air Regulations for the type and grade of pilot certificate sought; and

(c) If he passes the written examination on the Civil Air Regulations required of applicants for the type and grade of certificate sought."

2. Amend section 20.149 to read as follows:

"20.149. *Military competence.* Same as section 20.129."

AMENDMENT 40-2----- March 17, 1943
Effective March 17, 1943.

Part 40 of the Civil Air Regulations is amended as follows:

1. Amend paragraph 40.2611 (b) to read as follows:

"40.261. *First pilots.* * * *
"40.2611 (b). Each first pilot within the six months preceding his qualifications for a particular route shall have made over such route or part thereof on which he will pilot aircraft for applicant five one-way trips, any of which may be made either as the pilot without passengers or as second pilot with or without passengers. Two of such trips shall have been made within the 60 days preceding qualification. During the qualifying trips, the pilot shall be able at least twice to observe every part of the route for which qualification is sought when the visibility is not less than five miles as observed from the cockpit. In addition, the pilot shall have made over such route or such part thereof one trip during which the visibility was not less than five miles as observed from the cockpit and during which he shall have made at least one landing at each intermediate field or a visual examination thereof from a safe low altitude if field conditions prevent such landings. During the six above specified trips he shall have made at least one landing at each terminal and scheduled intermediate stop.

For the duration of the war and not to exceed six months thereafter the Administrator may, in lieu of all or any part of the above specified trip requiring landing at or examination of intermediate fields, permit an examination of such fields from the ground or such other qualifying means as may in his opinion provide equivalent competency."

2. Amend paragraph 40.2612 (c) and 40.2613 (d) to read as follows:

"40.2612 (c). (Unassigned.)"

"40.2613 (d). (Unassigned.)"

3. Amend paragraph 40.2614 (e) to read as follows:

"40.2614 (e). Each first pilot within the six months preceding his qualification for an alternate route shall have made over the proposed route on which he will pilot aircraft for applicant one trip during which the visibility was not less than five miles as observed from the cockpit and during which he shall have made at least one landing at each scheduled intermediate stop and intermediate field or, in the case of an intermediate field, a visual examination thereof from a safe low altitude if field conditions prevent such landing. For the duration of the war and not to exceed six months thereafter the Administrator may, in lieu of the above specified trip permit an examination of such fields from

the ground or such other qualifying means as may in his opinion provide equivalent competency."

4. Amend section 40.271 to read as follows:

"40.271. *First pilots.* Same as in § 40.261, except that at least one one-way trip of those trips required by § 40.2611 (b) shall have been made during the period between 1 hour after sunset and 1 hour before sunrise."

AMENDMENT 60-8----- March 2, 1943
Effective March 2, 1943.

Part 60 of the Civil Air Regulations is amended as follows:

Strike section 60.322 and insert in lieu thereof the following:

"60.322. *Military insignia.* No aircraft, other than aircraft of the national-defense forces of the United States, shall be operated with emblems, insignia, or markings of the national-defense forces unless written authorization for such use is obtained from the War or Navy Departments."

AMENDMENT 60-9----- March 2, 1943
Effective March 2, 1943.

Part 60 of the Civil Regulations is amended as follows:

1. Strike the reference "60.5843" as it appears in section 60.107 and 60.109 and insert in lieu thereof "60.58420."

2. Strike the reference "§§ 60.58420 and 60.5843" as it appears in section 60.108 and insert in lieu thereof "§§ 60.58421 and 60.58430."

3. Strike the reference "§ 60.322" as it appears in section 60.951 (c) and insert in lieu thereof "§ 20.37."

AMENDMENT 60-10----- March 10, 1943
Effective April 1, 1943.

Section 60.3505 of the Civil Air Regulations is amended to read as follows:

"60.3505. Any maneuver required in student instruction or solo practice under the supervision of a certificated flight instructor, the Army, Navy, Marine Corps, or Coast Guard, or in flight tests given by an inspector of the Administrator, may be performed at an altitude less than 500 feet above the ground or water if necessary for the proper execution of such maneuver, notwithstanding the provisions of section 60.3503."

AMENDMENT 60-11----- March 8, 1943
Effective April 1, 1943.

Section 60.43 of the Civil Air Regulations is amended to read as follows:

"60.43. *Flight plan.* A flight plan is not required unless the flight is made at night and lies within or passes through airway traffic control areas as specified in section 60.471."

AMENDMENT 60-12----- March 16, 1943
Effective April 1, 1943.

Part 60 of the Civil Air Regulations is amended as follows:

1. Amend section 60.471 to read as follows:

"60.471. *Contact flight on civil airways.* Aircraft flying under contact flight rules along or across a civil airway during the night, except for necessary ascent and descent, shall maintain flight altitudes as described in section 60.58; and a flight plan in accordance with section 60.1330 shall be filed for any such flights which are to lie within or pass through airway traffic control areas. Aircraft flying under contact flight rules along or across a civil airway during the day, except for necessary ascent or descent, shall maintain flight altitudes as described in section 60.78 as nearly as existing conditions permit."

2. Strike section 60.4710 and insert in lieu thereof the following:

"60.4710. (Unassigned.)"

3. Strike section 60.4711 and insert in lieu thereof the following:

"60.4711. (Unassigned.)"

AMENDMENT 60-13----- March 16, 1943
Effective April 1, 1943.

Section 60.700 (a) of the Civil Air Regulations is amended to read as follows:

"60.700 (a). At any height whatsoever over a congested area of any city, town, or settlement, or over any open-air assembly of persons, or over any airport or landing area or within 1,000 feet horizontally thereof, or within the limits of a civil airway except

within that portion lying adjacent to, but outside of a range approach channel."

AMENDMENT 60-14----- March 10, 1943
Effective April 1, 1943.

Section 60.133 of the Civil Air Regulations is amended to read as follows:

"60.133. *Flight plan.*

"60.1330. *Flight plan for contact flight.* The flight plan shall contain the following information:

- (a) Identity of pilot and aircraft.
- (b) Time and point of departure.
- (c) Proposed cruising altitude or altitudes.
- (d) Proposed route to be followed.
- (e) Destination and estimated time of arrival.
- (f) Usable radio equipment carried in aircraft, if any.
- (g) Number of aircraft making the flight, if the aircraft are to be flown in formation.

"60.1331. *Flight plan for instrument or over-the-top flight.* The flight plan shall contain the following information:

- (a) The aircraft identification mark, or the name of the governmental service in which the aircraft is employed, if so employed, or the name of the air carrier operator and the trip number, if engaged in scheduled air transportation service.
- (b) The type of aircraft involved and the number of aircraft making the flight, if the aircraft are in formation.
- (c) The name of the pilot, or of the flight commander if the aircraft are in formation.
- (d) The point of departure of the particular flight for which such plan is being filed.

(e) The proposed cruising altitude or altitudes.

- (f) The point of first intended landing.
- (g) The proposed cruising airspeed.
- (h) The radio equipment carried in the aircraft. (If no radio—NORDO; if radio receiver only—RONLY; if two-way radio statement of transmitter frequency to be used.)

(i) The proposed time of departure. (The time of departure shall be considered as the time when the aircraft leaves the ground.)

(j) The estimated elapsed time until arrival on the ground at the point of first intended landing. (For scheduled operation, the first stop to be made, together with additional stops if requested by an airway traffic control center.)

(k) The alternate airport, if the flight is to involve instrument flight.

(l) The route, if other than a direct course, and any other pertinent information which the pilot deems useful for control purposes or which may be requested by an airway traffic control center."

AMENDMENT 60-15----- March 16, 1943
Effective April 1, 1943.

Part 60 of the Civil Air Regulations is amended by adding a new section 60.3512 to read as follows:

"60.3512. *Aircraft practicing take-offs and landings under contact flight rules within an airway traffic control area shall not exceed an altitude of 1,500 feet above the airport from which such practice is being conducted.*"

AMENDMENT 60-16----- March 19, 1943
Effective April 1, 1943.

Section 60.343 of the Civil Air Regulations is amended to read as follows:

"60.343. *Proximity in flight.* No aircraft shall be flown closer than 500 feet to any other aircraft in flight, except that by prearrangement two or more aircraft may be flown in formation closer than 500 feet to each other. When such flight is to be made within the limits of an airway traffic control area a flight plan shall be filed in accordance with section 60.1330."

AMENDMENT 61-5----- March 1, 1943
Effective March 1, 1943.

Subparagraph 2 of paragraph (b) of section 61.7114 of the Civil Air Regulations is amended to read as follows:

"61.7114. *Flight equipment.* * * *

(b) Visual-contact night operation. * * *

"2. Forward position lights and continuous white taillight."

(See Regulations, page 55)

Status of Air Regulations

As of April 1, 1943

HOW TO OBTAIN PARTS, AMENDMENTS, AND MANUALS

THOSE PARTS AND MANUALS ON WHICH A PRICE IS LISTED IN THE TABULATION WHICH FOLLOWS ARE ON SALE AT THE GOVERNMENT PRINTING OFFICE (SHOWN AS GPO IN TABLE), AND ARE NOT AVAILABLE FOR FREE DISTRIBUTION FROM THE CAA.

The Government Printing Office is the official sales agency for all government publications and is separate and distinct from the CAA and the Department of Commerce. The rules of the Superintendent of Documents require that remittances be made in advance of shipment of publications, either by coupons, sold in sets of 20 for \$1 and good until used, or by check or money order payable to the Superintendent of Documents, Government Printing Office. Currency is sent at sender's risk. Postage stamps, foreign money, and smooth coins are not acceptable. A discount of 25 percent is allowable to book dealers and quantity purchasers of 100 or more publications, on condition that the purchasers will adhere to the public sales price set by the Superintendent of Documents and that pub-

lications shall not be overprinted with any advertising matter.

Eventually, all Parts and Manuals will be placed on sale; meanwhile, those not yet on sale (carrying remark, "Order from CAA only") may be obtained without charge from the CAA upon demonstration of valid interest on the applicant's part.

The following tabulation carries in the right-hand column the numbers of all effective amendments to each Part and Manual issued subsequent to its publication. Parts and Manuals obtained from the CAA will include all effective amendments, but amendments for Parts and Manuals purchased from GPO must be requested separately from the CAA. When requesting amendments from the CAA, please be sure to state Part numbers for which they are desired.

ALL AMENDMENTS TO THE REGULATIONS, AND NOTICE OF NEW PARTS AND MANUALS ARE PRINTED IN THE CIVIL AERONAUTICS JOURNAL, AS RELEASED.

Bound volumes of the complete Civil Air Regulations are no longer available. Parts and amendments are punched for filing in standard three-ring binders.

For your guidance we have listed the Parts and Manuals applicable to the various airmen certificates issued.

Pilots:

Parts 01, 20, 60, 501, 503, and Manual 60.

Airline Transport Pilots:

Parts 01, 04, 21, 27, 40, 60, 61, 98, 501, 503, and Manuals 04, 15, and 18.

Lighter-Than-Air Pilots:

Parts 01, 22, 60, 501, 503, and Manual 60.

Aircraft Mechanics:

Parts 01, 04, 15, 18, 24, 501, 503, section 60, 32, and Manuals 04, 15, and 18.

Aircraft Engine Mechanics:

Parts 01, 04, 13, 14, 18, 24, 501, 503, and Manuals 04, 14, and 18.

Parachute Riggers:

Parts 15, 25, and Manual 15.

Air-Traffic Control-Tower Operators:

Parts 26, 60, and Manual 60.

Aircraft Dispatchers:

Parts 27, 40, 60, 61, and Manual 60.

Ground Instructors (rating in Civil Air Regulations):

Parts 01, 20, 51, 60, 501, 503, and Manual 60.

PARTS CANCELED AND UNASSIGNED

Canceled Parts 00 and 03 now incorporated in Part 501; canceled Part 23 now incorporated in Part 51. Parts 90-96, inclusive, canceled. All other Part numbers not shown are unassigned.

Civil Air Regulations

Aircraft

PART NO.	TITLE	DATE	REMARKS	PRICE	EFFECTIVE AMENDMENTS
01	AIRWORTHINESS CERTIFICATES	10-15-42	On sale at GPO	\$0.05	
02	TYPE AND PRODUCTION CERTIFICATES	3-1-41	On sale at GPO	.05	
04	AIRPLANE AIRWORTHINESS	8-15-42	On sale at GPO	.15	04-1, Reg. Ser. 228.
13	AIRCRAFT ENGINE AIRWORTHINESS	8-1-41	On sale at GPO	.05	
14	AIRCRAFT PROPELLER AIRWORTHINESS	7-15-42	On sale at GPO	.05	
15	AIRCRAFT EQUIPMENT AIRWORTHINESS	11-15-40	In stock; order from CAA only		15-1, 15-2.
16	AIRCRAFT RADIO EQUIPMENT AIRWORTHINESS	2-13-41	On sale at GPO	.05	
18	MAINTENANCE, REPAIR, AND ALTERATION OF CERTIFICATED AIRCRAFT AND OF AIRCRAFT ENGINES, PROPELLERS, AND INSTRUMENTS.	9-1-42	On sale at GPO	.05	

Airmen

20	PILOT CERTIFICATES	9-1-42	On sale at GPO	\$0.10	20-1, 20-2, 20-3, 20-4, Reg. Ser. 242, 247.
21	AIRLINE TRANSPORT PILOT RATING	10-1-42	On sale at GPO	.05	21-1, Reg. Ser. 236, 251.
22	LIGHTER-THAN-AIR PILOT CERTIFICATES	10-15-42	On sale at GPO	.05	Reg. Ser. 247.
24	MECHANIC CERTIFICATES	10-1-42	On sale at GPO	.05	24-1, 24-2.
25	PARACHUTE TECHNICIAN CERTIFICATES	1-21-43	In stock; order from CAA only		
26	AIR-TRAFFIC CONTROL-TOWER OPERATOR CERTIFICATES	7-1-42	On sale at GPO	.05	26-1.
27	AIRCRAFT DISPATCHER CERTIFICATES	9-1-42	On sale at GPO	.05	27-1.
29	PHYSICAL STANDARDS FOR AIRMEN	6-1-42	On sale at GPO	.05	

Air Carriers

40	AIR CARRIER OPERATING CERTIFICATION	11-1-42	On sale at GPO	\$0.10	40-1.
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Air Agencies

50	FLYING SCHOOL RATING	11-1-40	On sale at GPO	\$0.05	87, 113, 50-3, Reg. No. 216. ¹
51	GROUND INSTRUCTOR RATING	7-1-42	On sale at GPO	.05	
52	REPAIR STATION RATING	10-1-42	On sale at GPO	.05	
53	MECHANIC SCHOOL RATING	8-1-42	On sale at GPO	.05	
54	PARACHUTE LOFT CERTIFICATES AND RATINGS	1-21-43	In stock; order from CAA only		

Air Navigation

60	AIR-TRAFFIC RULES	7-15-42	On sale at GPO	\$0.10	60-2 thru 60-16.
61	SCHEDULED AIR-CARRIER RULES	10-15-42	On sale at GPO	.10	61-1 thru 61-5.
66	FOREIGN AIR-CARRIER REGULATIONS	1-15-42	On sale at GPO	.05	

Miscellaneous

97	RULES OF PRACTICE GOVERNING SUSPENSION AND REVOCATION PROCEEDINGS.	10-1-42	In stock; order from CAA only		
98	DEFINITIONS	10-15-42	On sale at GPO	\$0.05	
99	MODE OF CITATION OF REGULATIONS	11-15-40	In stock; order from CAA only		

¹ No copies available. (Waiver of requirements.) Consult CAA inspector for specific provisions of this amendment.

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Status of Air Regulations

(Continued from preceding page)

Regulations of the Administrator

PART NO.	TITLE	DATE	REMARKS	PRICE	EFFECTIVE AMENDMENTS
501	AIRCRAFT REGISTRATION CERTIFICATES.....	3-31-43	In stock; order from CAA only.....	.....	.....
503	RECORDATION OF AIRCRAFT OWNERSHIP.....	3-31-43	In stock; order from CAA only.....	.....	.....
510	GENERAL REGULATIONS, WASHINGTON NATIONAL AIRPORT.....	9-26-41	In stock; order from CAA only.....	.....	.....
511	GENERAL AERONAUTICAL RULES FOR THE WASHINGTON NATIONAL AIRPORT.....	9-26-41	In stock; order from CAA only.....	.....	.....
525	NOTICE OF CONSTRUCTION OR ALTERATION OF STRUCTURES ON OR NEAR CIVIL AIRWAYS.....	11-1-41	In stock; order from CAA only.....	.....	1.
531	SEIZURE OF AIRCRAFT.....	12-8-41	In stock; order from CAA only.....	.....	.....
532	REPRODUCTION AND DISSEMINATION OF CURRENT EXAMINATION MATERIALS.....	1-15-43	In stock; order from CAA only.....	.....	.....
600	DESIGNATION OF CIVIL AIRWAYS.....	3-1-42	Not published ¹.....	.....	1 through 20. ¹
601	DESIGNATION OF AIRWAY TRAFFIC CONTROL AREAS, ETC.....	1-15-42	Not published ¹.....	.....	1 through 26. ¹

Civil Aeronautics Manuals

04	AIRPLANE AIRWORTHINESS.....	2-1-41	On sale at GPO.....	\$0.50	Release 50, 97, ² 105, ² 117, ² 140. ²
14	AIRCRAFT PROPELLER AIRWORTHINESS.....	12-1-38	In stock; order from CAA only.....	.....	.....
15	AIRCRAFT EQUIPMENT AIRWORTHINESS.....	7-1-38	On sale at GPO.....	.10	.....
16	AIRCRAFT RADIO EQUIPMENT AIRWORTHINESS.....	2-13-41	In stock; order from CAA only.....	.....	Release 62.
18	MAINTENANCE, REPAIR, AND ALTERATION OF CERTIFICATED AIRCRAFT AND OF AIRCRAFT ENGINES, PROPELLERS, AND INSTRUMENTS.....	6-1-41	On sale at GPO.....	.50	.....
50	FLYING SCHOOL RATING.....	12-40	In stock; order from CAA only.....	.....	Release 77.
52	REPAIR STATION RATING.....	2-41	In stock; order from CAA only.....	.....	.....
53	MECHANIC SCHOOL RATING.....	5-40	In stock; order from CAA only.....	.....	.....
60	AIR TRAFFIC RULES.....	11-15-42	On sale at GPO.....	.20	.....

¹ See Air Navigation Radio Aids.

² Only pertinent pages furnished.

New Type Approvals

(Approval numbers and dates of assignment in parentheses)

Appliances

Goodyear, low profile wheels, model 33LP, 11.50-16.50. Approved static load per wheel 8,100 pounds (type certificate No. 152, March 18, 1943).

New Models Added to Old Type Approvals

(Approval numbers and dates of approval of new models in parentheses)

Appliances

Jennings, skis, model TY-3. Approved static load per ski 1,000 pounds (type certificate No. 111, March 5, 1943).

Propellers

Fahlin, D-560A, wood, 6 feet 5 inches diameter, 5 feet 2 inches to 4 feet 8 inches pitch, 75 horsepower, 2,015 revolutions per minute (type certificate No. 737, March 9, 1943).

Fahlin, D-560A-1, wood, 6 feet 4 inches diameter, 5 feet 2 inches to 4 feet 8 inches pitch, 75 horsepower, 2,015 revolutions per minute (type certificate No. 737, March 9, 1943).

Fahlin, D-565A, wood, 5 feet 9 inches diameter, 4 feet 4 inches to 4 feet pitch, 65 horsepower, 2,220 revolutions per minute (type certificate No. 681, March 9, 1943).

34,000 Miles of Airways

CAA has developed a 34,000-mile system of lighted and radio-protected airways in the country. Marked at first only by beacon lights for night flights, they now have radio beams and other guide signals to provide definite flight paths by day or night.

APRIL 15, 1943

Regulations

(Continued From Page 53)

AMENDMENT 61-6..... March 17, 1943
Effective March 17, 1943.

Sections 61.5150 (a) and 61.5151 (b) of the Civil Air Regulations are amended to read as follows:

61.515. Route competency renewal. * * *

"61.5150 (a). A first pilot, who has been absent from flight duty over a regular route or part thereof for a period of less than 18 consecutive months and whose route competency has expired in accordance with the provisions of § 61.5140 (a), will be deemed competent for such route or part thereof upon completion of two one-way trips over the route or part thereof as pilot without passengers or as second pilot with or without passengers. During such trips the pilot shall be able at least once to observe every part of the route for which renewal of competency is sought, when the visibility is not less than five miles as observed from the cockpit."

"61.5151 (b). Alternate route renewal. A first pilot who has been absent from flight duty over an alternate route for a period of more than 24 consecutive months and whose competency has expired in accordance with the provisions of § 61.5141 (b) will be deemed competent for such alternate route upon completion of one-way trip over the route as pilot without passengers or as second pilot with or without passengers."

National Airport Booklet

The United States can claim the most modern and efficient airport in the world in its National Airport at Washington, according to a story-booklet describing how this airport was raised out of the bottom of the Potomac River and built to serve as a model for all air terminals. Prepared as a souvenir of the National Airport, the story is told in a 20-page, beautifully illustrated booklet which is for sale at 15 cents per copy at the Superintendent of Documents, Government Printing Office, Washington, D. C.

Pick-up Service

(Continued From Page 41)

The 15 companies with applications now on file with the Board, propose air mail pick-up service for 1,453 cities in 29 states. The estimated mileage covered by this service would be 44,996. The proposed routes are sprinkled throughout the United States from the East to the West coasts, giving to the Middlewest, perhaps, the most complete service.

The companies applying for pick-up routes are Aero Pick-up Service Corporation, All American Aviation, Inc., Automatic Air Mail, Inc., Century Aviation Company, Des Moines Flying Service, Inc., Mercury Development Corporation, Mid-Continent Airlines, Inc., Page Airways, Inc., Rebel Air Freight, Inc., Southern Aviation Corporation, Southwest Airways Company, Southwest Feeder Airlines, Inc., United Air Lines Transport Corp., West Coast Airlines, Inc., Western Air Lines, Inc.

Aeronautical Legislation

Introduced

H. Con. Res. 13—AIR BASE ACQUISITION; bill providing for the permanent acquisition of the strategic islands from Bermuda to South America for air and naval bases as a reciprocal part of the lend-lease program; referred to the Committee on Foreign Affairs.

H. R. 1670—AMENDMENT TO BILL; to amend section 2 of the Civilian Pilot Training Act of 1939 which was referred to the Committee on Commerce.

H. R. 2293—COMPENSATION PENSION; bill to provide disability and death compensation or pension in the case of certain members of the Naval Enlisted Reserve who received Civil Aeronautics Administration war training prior to December 15, 1942; referred to the Committee on Naval Affairs.

